LEAN LOGISTICS

Its Time Has Come!

Col. Arthur B. Morrill III, USAF

Some might suggest the most profound changes imaginable in our Air Force resulted in restructuring of our operational wings. While these were undeniably far-reaching changes, others might conclude that *from a logistics perspective, even greater changes are those affecting and improving our core logistics processes and capabilities*. Lean Logistics is a **system** of innovations that does just that.

With this in mind, I'll address three components of this evolving Air Force logistics environment — change, challenge and opportunity. The section regarding ongoing change highlights key initiatives under the "Lean Logistics" umbrella. Under challenges, I'll emphasize the need for logisticians to vigorously pursue continuous improvements in all aspects of the logistics arena. And finally, I'll summarize how change and challenges will lead to opportunities for all logisticians as we end this century.

Lean Logistics: A New Era of Change

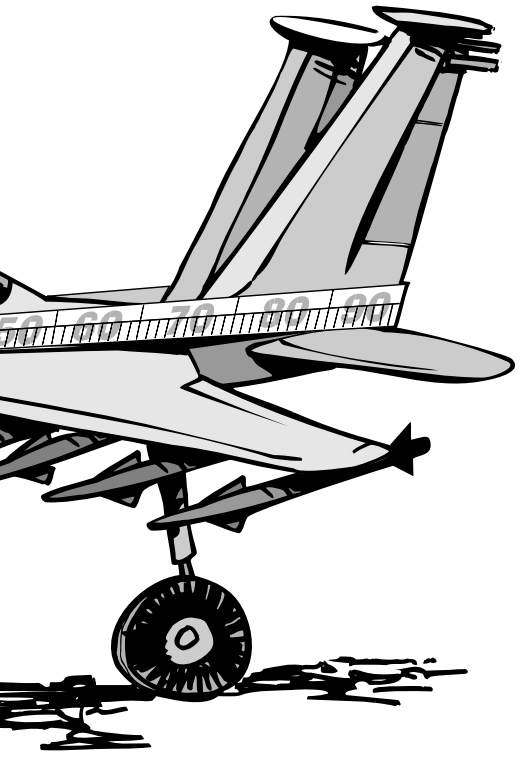
Lean Logistics is an interrelated series of logistics initiatives that promote combat capability, enhance our warfighting sustainability, shrink the logistics footprint and reduce infrastructure. The goal is to *enhance combat capability while reducing the annual operating costs of Air Force systems by adopting state-of-the art business practices and streamlined processes, and by reducing infrastructure throughout the Air Force logistics community*.

Three ground rules apply. First, the Air Force "benchmarks" readiness and system availability at required Air Force rates to meet two, nearly simultaneous major regional contingencies or peacetime commitments — whichever are higher. Second, Lean Logistics business practices and processes are applicable

Lean Logistics is an interrelated series of logistics initiatives that promote combat capability, enhance our warfighting sustainability, shrink the logistics footprint and reduce infrastructure.

Col. Morrill is the Executive Officer, Deputy Chief of Staff for Logistics, Headquarters, U.S. Air Force, the Pentagon, Washington, D.C. He holds an M.P.A. from Ball State University, Ind., and also received a B.S. from the College of Great Falls, Mont., graduating cum laude, with a double major in history and political science.

and *effective* in peacetime and during contingencies, in the continental United States (CONUS) and overseas. Third, logistics infrastructure reductions achieved by Lean Logistics allow the Air Force to operate effectively with fewer resources, while sustaining force structure, peacetime optempo and combat readiness.



How does Lean Logistics change our current approach to logistics? Figure 1 helps illustrate the improvements. Our first foray into "leaner logistics" and enhanced readiness was Two-Level Maintenance (2LM), which now holds the prominent position in the Lean Logistics architecture. Two-Level Maintenance is an Air Force initiative that was implemented on 1 October 1993 via a phased-in schedule after a series of convincingly successful tests. The importance of this initiative is twofold: Two-Level Maintenance improves the operational focus, while simultaneously reducing the Air Force's mobility footprint and costs associated with supporting Air Force weapon systems. It does so by improving the "tooth-to-tail" ratio ("tooth-to-jawbone" says Lt. Gen. (Ret) Marquez).

For example, converting selected avionics and engines from three to two levels of maintenance reduces intermediate-level maintenance requirements, thereby permitting reductions in base-level maintenance and support personnel, equipment and facilities. In addition, the Air Force also achieves personnel savings by reducing 4,430 manpower positions Air Force-wide from intermediate maintenance.

Also, the Air Force reduces equipment purchases and maintenance by 10 percent over the Future Years Defense Program. *However, they maintain readiness under 2LM by controlling and streamlining all aspects of the repair pipeline*. Broken parts move from bases to repair centers at Air Force depots and then return to the bases, all at "high velocity" via highly reliable transportation. In doing so, depot repair centers combine 2LM work with existing depot-repair capabilities.

Finally, 2LM not only saves resources, but also enhances our ability to support contingencies by reducing the "mobility footprint." Two-Level Maintenance relieves us from deploying intermediate repair equipment — in an F-16 squadron, more than 100 tons of engine maintenance and avionics equipment! We're also relieved of the need to put 50 avionics and engine technicians in harm's way.

What makes this streamlining possible? The answer is deceptively simple: Two-Level's daily, time-certain delivery and return of critical spare parts. Daily time-certain delivery will use the commercial CONUS infrastructure of the CRAF express carrier in peacetime, and Military Overnight Express (MOE) during contingencies. Military Overnight Express is the military adaptation of commercial overnight delivery. It consists of the express carrier's CONUS infrastructure, Air Mobility Command aircraft, and a theater distribution system for express shipments. The Air Mobility Command will provide daily round-trip, direct service between the express carriers' CONUS hubs and the designated aerial ports of debarkation. The theater commander will establish a distribution system that provides next-day delivery of critical cargo.

The elements that make Lean Logistics initiatives invaluable to warfighters are high-velocity transportation and the highly reliable transportation of parts in peacetime and during conflict, in CONUS and overseas. In fact, these components serve as the foundation for the Air Force's increasing use of modern business practices such as

FIGURE1. Changing the Logistics Process

TODAY'S LOGISTICS	LEAN LOGISTICS
Characteristics - Big Inventory - Slow/Uncertain Transport - Cumbersome Batch Repair - Static Processes - High Cost	*Characteristics* - Smaller Inventory - High Velocity/Reliable Delivery - Optimum Repair Flow - Continuous Improvement - Reduced Investment
Base Processes: *Large Capital Investment* - Big Peacetime Operating Stock (POS) - Big Readiness Spares Packages (RSP) - Big Footprint	*Base Processes:* *Lean Two-Level Maintenance* - Smaller Tailored Stocks - Streamlined Support Packages - Light Footprint
BOTTOM LINE - Big Inventory Drives Infrastructure	*BOTTOM LINE* - Innovations Streamline Infrastructure

Source: HQ USAF/LGM-2

just-in-time (JIT) inventory, Military Overnight Express. The Lean Logistics "Building Chart" in Figure 2 illustrates the relationships.

While a number of other Lean Logistics initiatives are still in varying stages of development, two other Lean Logistics initiatives **already implemented** deserve mention: Door-to-Door Distribution (D3) and Repair and Return Packaging (R2P). You'll recall that LogAir was an integrated system of contract aircraft and trucks established to expedite the movement of reparables to, from, and between Air Force bases and their supporting depots. Budgetary and force structure changes prompted us to look at LogAir's effectiveness. As a result, we established the LOG EXPRESS Tiger Team to study LogAir and its alternatives.

We found that while LogAir costs $116 million annually, D3 costs only $33 million per year! Door-to-Door Distribution uses commercial premium express transportation for high-priority cargo, and surface transportation for routine, hazardous, oversized and classified cargo. In short, D3 is more bang for the buck — it costs less, yet it's more responsive, guaranteed and on-time.

We should evaluate what we do, consider why we do it, assess what it gives us, and determine if the output is worth the input given today's security requirements and resource limitations.

Another key Lean Logistics initiative changing the way we do business is Repair and Return Packaging (R^2P). *Implemented in conjunction with 2LM, R2P works to increase the movement velocity of critical spares (high-value, short-supply) by minimizing the number of physical handling nodes, thereby entering the spares into the transportation and repair pipeline sooner.*

In brief, the Air Force adapted the successful business practice of "return labeling," which was pioneered by the mail order industry. This initiative features the proven commercial business practice of pre-addressed return shipment labels. Aside from higher-velocity movement of critical spares, its benefit is that commercial express carriers provide system equipment to create all shipment documentation. Another plus is that no capital investment is required for additional shipment hardware — a double bonus!

The magnitude of change that could potentially result from these and other Lean Logistics initiatives is awesome for some, perhaps intimidating for others. For example, some logisticians may be concerned that with initiatives such as 2LM, base-level operational maintenance is on the verge of extinction. Others may believe that with Base Realignment and Closure Commission-induced Service depot closures, the Services' organic depot maintenance may also be on the wane.

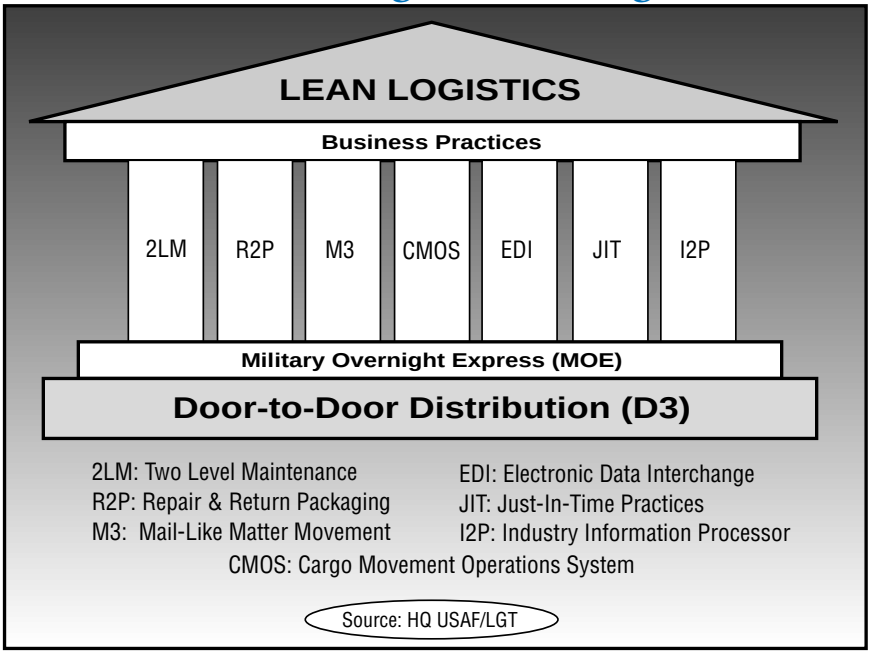
Neither conclusion could be further from the truth since maintenance capabilities in both of these areas will continue to be integral to preserving and enhancing our Air Force's global reach and power — either as a stand-alone capability, or in concert with other Services, joint activities or the private sector. In short, this new era is one in which opportunities for logisticians should be seen as growing...**not** shrinking.

The Challenge to Logisticians: Embrace Innovation

The challenge this new era in logistics poses makes it critical that Air Force **logisticians** chart the course of Air Force logistics in the coming years by encouraging innovation and by leading the effort to implement continuous improvements to business practices and logistics processes.

Does this increasing focus on continuous improvement mean we should **automatically** discard current Air Force business practices and logistics processes? Absolutely not! We should

FIGURE 2. The Lean Logistics Building



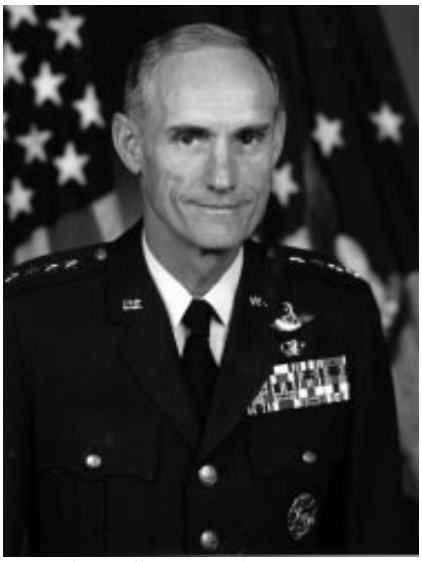


Photo by Mickey Sanborn, USAF

General Merrill A. McPeak, USAF (Ret.)

evaluate what we do, consider why we do it, assess what it gives us, and determine if the output is worth the input given today's security requirements and resource limitations. Then, if change is needed, we should look everywhere — anywhere — for a better way to do the job at hand and the job we expect to do in the future.

Continuous improvement means studying what works, what doesn't, why, and under what conditions. It may even mean looking to non-traditional sources for answers to traditional problems — something we're increasingly doing. For example, what Air Force logistician would have thought 10 years ago that the commercial mail order industry's "return labeling" business practice would help us develop the R2P concept that we now use to support Air Force weapon systems at reduced cost?

Where do we go for inspiration? What areas are ripe for examination from the macro- and micro-perspectives? Several disciplines and principles are likely sources of innovation affecting Air Force logistics practices and processes. A short list of such disciplines might include industrial engineering or public administration. A likely list of useful principles might be those that increase user control and reduce user costs while delivering a certain level of product quality or capability.

Examples of this latter group might include JIT practices, improved "make-or-buy" decision trees, streamlined commodity management, and flexible manufacturing and repair processes. The point is this: Whether we apply an entire discipline or just one principle, we're only just now discovering our capabilities for improving our logistics practices and processes — and logisticians should be at the forefront of this discovery. But, while this discovery should be unconstrained, it should also be focused — and leadership is the key.

Opportunities for Leadership: The Benefit of Innovation

With the restructuring of our operational wings and reduced defense budgets come great opportunities for logisticians to exercise leadership at all levels by fostering and implementing innovation in every area of logistics. Such leadership opportunities come with the prerequisite to expand one's experience base and develop one's professional skills. Foremost, logisticians achieve this prerequisite by gaining experience in operational and industrial logistics — at a variety of levels, CONUS and overseas.

Initially, this should be accomplished in one's primary logistics Air Force Specialty Code. However, subsequent experience in other logistics specialties can only enhance one's abilities as a logistician. Why? The answer is that despite change, the kinds of professional credentials we hold as important still remain important — because they give logisticians the tools they need to be innovative leaders in the current and future logistics environments.

The demographics of professional training and civilian education notwithstanding, however, the core message is this: The depth and breadth of an individual's experience is still most important. Second, we can enhance our abilities as military logisticians to better support the Air Force vision — *Air Force people building the world's most respected air and space force — global power and reach for America* — by bringing our military experience, training and education to bear on our profession of military logistics, making sure they all complement each other.

Photo by Ken Hackman, USAF

Two-Level Maintenance relieves us from deploying intermediate repair equipment — in an F-16 squadron, more than 100 tons of engine maintenance and avionics equipment. Picture: F-16C Falcon assigned to the 422d Test and Evaluation Squadron, Nellis Air Force Base, Nevada.

However, we're also discovering through our Lean Logistics efforts that exposure to, and the application of, the civilian educational disciplines and private-sector business practices to the military logistics arena are of growing importance. Perhaps it's this area that offers us greatest promise for continuous process improvements in military logistics. With this in mind, let me share some thoughts expressed by General Merrill A. McPeak, former U.S. Air Force Chief of Staff, at the first Quality Air Force Symposium held in October 1994 in Montgomery, Alabama:

> ...we can't relax. We must remain open to new ideas. We have to make the Air Force better. We can't afford to throttle back and level off — we must always have a good rate of climb. My position is that people should come in every morning saying this is a great place to work, but there's still room for improvement. The Secretary and I expect you to continue pushing the limits of excellence. When others look for an example of a quality operation, we want them to think first of the United States Air Force.

We do need to continue to push the limits of excellence, and Lean Logistics is a key means to do so — because it's the system of continuous improvements that brings our logistics structure in line with force structure. We also must reduce our logistics support costs while keeping, if not enhancing, our support capability. Our challenge: Minimize logistics infrastructure while building and sustaining a ready force.

A concept as powerful as Lean Logistics, however, can't support the level of reductions we'll face in the next few years. As a result, the Chief directed an effort to reduce operations and sustainability costs for our weapon systems. Reductions in ownership costs will likely come from reduced demand and consumption from the using commands. User efforts like Fast Fix and Gold Flag are important as they reduce demand through the base-level repair of selected parts, vice disposing of these parts or sending them back to depots for repair.

Whether we apply an entire discipline or just one principle, we're only just now discovering our capabilities for improving our logistics practices and processes — and logisticians should be at the forefront of this discovery.,

Likewise, reduced costs in the support organizations can reduce direct costs of labor and materials, and can reduce overhead from infrastructure and personnel. Finally, improved programming from the Air Staff can make our internal procedures more responsive, thereby allowing us to better capture savings from major command initiatives sooner in the budget process.

We can maintain our fighting edge and live within our budgets if we do these things — smartly. The efficiencies realized from Lean Logistics and comparable concepts will help finance our commitment to our people, our technological edge and our readiness. We must size, structure and manage our logistics resources carefully if we are to continue fielding the world's most respected air and space forces. Through Lean Logistics and our individual and collective efforts, we'll turn this vision into a living reality. As we prepare to enter the 21st century, the opportunity to do so is ours for the taking.